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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ANETTE BUSCHKA, PETER BLOMSTROM and TOMAS  
BILIGREN

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Appeal 2008-1467  
Application 09/870,517  
Technology Center 1700

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Decided: May 6, 2008

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Before EDWARD C. KIMLIN, BRADLEY R. GARRIS, and  
KAREN M. HASTINGS, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

1 Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's  
final rejection of claims 1-36. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

## BACKGROUND

The invention relates to a method of producing an absorbent material and the resultant absorbent material product. Claims 1 and 16 are illustrative:

1. An absorbent material comprising a mat of dry-laid cellulose fibres integrated with an air-laid non-woven gauze comprised of reinforcing textile fibres,

the air-laid non-woven gauze formed with an air-doffing apparatus card to provide a porous, penetrable gauze layer,

the absorbent material obtained by directly dry-laying the cellulose fibres on the newly formed gauze of textile fibres so that a portion of the cellulose fibres penetrate into the gauze to achieve a sufficient bonding with the textile fibres without any bonding agent.

16. A method of producing an absorbent material that includes a mat of dry-laid cellulose fibres integrated with an air-laid non-woven gauze comprised of reinforcing textile fibres, comprising:

air-forming textile fibres with an air-doffing apparatus card to form on a wire a non-woven gauze; and

directly dry-laying the cellulose fibres on the newly formed non-woven gauze of textile fibres to integrate the cellulose fibres with the non-woven gauze and form a mat wherein a portion of the cellulose fibres penetrate into the gauze to achieve a sufficient bonding with the textile fibres without any bonding agent.

The Examiner relies upon the following references as evidence of unpatentability:

Matsumura	US 3,984,898	Oct. 12, 1976
Ruffo	US 4,018,646	Apr. 19, 1977
Fehrer	US 4,972,551	Nov. 27, 1990
Rosseland	WO 97/45083	Dec. 4, 1997

Claim 1-32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsumura in view of Ruffo and Fehrer. To reject claims 33-36, the Examiners adds Rosseland.

Appellants do not separately argue with any reasonable specificity the individual claims rejected under 35 U.S.C. § 103(a) (App. Br. 5-11; Reply Br. 4-5). Therefore, we select the broadest independent product claim 1 and the broadest independent method claim 16 to decide the issues on appeal.

### ISSUES

The main issues raised by this appeal are whether Appellants have overcome the rejection by showing that the applied reference evidence does not support the Examiner's conclusion of obviousness; specifically, whether the combined teachings of Matsumura, Ruffo, and Fehrer would not have taught or suggested to one of ordinary skill in the art the absorbent material recited in claim 1, and the use of the method steps as required by claim 16.

### FINDINGS OF FACT

A preponderance of the evidence of record supports the following Findings of Facts (FF):

1. Matsumura describes a method for making an absorbent material which explicitly includes all the claimed method steps in Appellants' claim 16 except (a) Matsumura air lays previously carded textile fibers with a lickerin apparatus versus air laying the textile fibers with an "air-doffing apparatus card" as claimed (*see, e.g.*, Fig 8; col. 1, ll. 12-17; col. 8, ll. 33-65; Ans. 8-9).

2. Matsumura describes that the dry-laid cellulose fibers integrate with the non-woven textile layer and form a mat wherein a portion of the cellulose fibers penetrate into the gauze; "...at least some of the short [cellulose] fibers tend to grip and form an *interfiber bond* with the long [textile] fiber layer." (col. 8, ll. 60-64, emphasis provided). These interfiber bonds occur without any bonding agent (*see, e.g.*, col. 8, ll. 60-64; *see also* abstract; col. 2, ll. 48-60).

3. Matsumura further describes that a bonding agent (namely, an adhesive) may be used in a preferred form of a finishing stage (col. 9, ll. 54-65).

4. Fehrer describes air laying fibers using carding drums with air entraining injector nozzles to ensure a uniform distribution of fibers when making a non-woven fabric (*i.e.*, non-woven web) (*see, e.g.*, abstract; col. 2, ll. 10-15; Ans. 4).

5. One of ordinary skill in the art would recognize that Appellants admit that air-doffing apparatus cards are known in the art to make non-woven webs, *e.g.*, "a Fehrer K21 card" (Spec. 4:17-13; 6:11-13).

6. Ruffo describes that non-woven webs may be post treated by "any suitable conventional technique", either "mechanical or chemical" and specifies that mechanical interlocking techniques are a known alternative to spray bonding techniques using an adhesive binder (*e.g.*, col. 12, ll. 61 to col. 13, line 5; col. 13, ll. 22-43).

7. One of ordinary level of skill in the art would be an engineer or scientist who designs absorbent articles and methods as exemplified in the applied references.

8. Appellants do not rely on any evidence of secondary considerations of nonobviousness, such as unexpected results.

#### PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007). The legal question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) secondary considerations, if any. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S. Ct. at 1734 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”)

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. *See, In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991).

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 127 S. Ct. at 1739. The question to be asked is “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *KSR*, 127 S. Ct. at 1740. The Supreme Court

also noted in *KSR* that an obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 127 S. Ct. at 1741.

## OPINION

We will first address the broadest independent method claim 16; followed by a discussion of the broadest independent product claim 1 which recites an absorbent material produced by the same steps as recited in method claim 16.

The Examiner determined that Matsumaru describes every limitation in method claim 16 except (a) Matsumura air lays previously carded textile fibers with a lickerin apparatus versus air laying the textile fibers with an “air-doffing apparatus card” as claimed, and (b) patentee uses a bonding agent (namely, an adhesive) versus the claimed method which is performed in the absence of a bonding agent (Ans. 3-5), which Appellants do not dispute. Fehrer describes that using an air-doffing apparatus card to make a uniform non-woven web is known (FF 4). Ruffo teaches that mechanical interlocking techniques (which do not use a bonding agent) are a known alternative technique to use of a bonding agent (*e.g.*, an adhesive binder spray) for non-woven webs (FF 6). Thus, the issue on appeal is whether the combination of Matsumura, Fehrer, and Ruffo would have taught or suggested to one of ordinary skill in the art the use of the method steps as required by claim 16, and the absorbent material produced thereby as recited in claim 1.

*Method Claim 16*

Appellants' first contention is that since Matsumura teaches use of a lickerin roll to form the gauze layer, it does not teach or suggest the use of an air-doffing apparatus card to form the non-woven gauze (App. Br. 7-8). Appellants further argue that Fehrer cannot be properly combined with Matsumura since it would change the principle of operation of the invention being modified (App. Br. 7-8). We disagree.

We agree with the Examiner that carding and airlaying are two separate techniques in the art (Ans. 8, first paragraph). Appellants do not dispute this; rather, Appellants argue that air laying fibers directly from a card produces a unique gauze (Reply Br. 5). Matsumura uses a carded web of rayon fibers and then passes same through a lickerin roll before depositing the fibers on the screen to form the gauze (*see, e.g.*, col. 2, ll. 44-65; col. 8, ll. 33-65). Fehrer cards the web as part of the air laying process (FF 4). Appellants contend that one of ordinary skill in the art would appreciate that an air laying process that includes a lickerin roll produces a more random alignment of fibers (*i.e.*, a uniform distribution of fibers in both cross and machine directions) than a dry-laid process which uses a card, which normally aligns most of the fibers in the machine direction (*compare* Matsumura col. 1, ll. 12-25 to col. 1, ll. 34-40; col. 3, ll. 3-4; App. Br. 7; Reply Br. 5). While Appellants may be correct, this does not convince us of any reversible error in the Examiner's conclusion of obviousness.

First, Fehrer teaches that the air-doffing apparatus card process described therein produces a uniform distribution of fibers (FF 4). It appears that a uniform distribution as taught in Fehrer would be more akin to a random versus an aligned distribution. (*See, e.g.*, Matsumura col. 1, ll. 34-



34: “Rayon non-wovens that have been formed by random webbing contain a fairly uniform distribution of fibers...”.) However, even assuming that Fehrer’s “air-doffing apparatus card” produces a more aligned distribution than a carded web fed to a lickerin roll, as in Matsumura, we determine that these techniques were known alternative ways to form a non-woven fabric web.

Each of Matsumura and Fehrer exemplify well established techniques for producing non-woven fabric webs (FF 1, 4, 5). Thus, we determine that to modify Matsumura to use an air-doffing apparatus card as in Fehrer, in place of the carded web fed to a lickerin roll, would have been *prima facie* obvious.

The Supreme Court noted in *KSR* that an obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” 127 S. Ct. at 1741. Further, the combination of familiar elements is likely to be obvious when it does no more than yield predictable results, and the question is whether the improvement is more than the predictable use of prior art elements according to their established functions. *KSR*, 127 S. Ct. at 1739, 1740. We find that using an air-doffing apparatus card achieves the predictable result of making a uniform non-woven web and were a known alternative way of forming a non-woven web versus air laying a carded web using a lickerin roll as taught in Matsumura. Appellants have not shown that there is more than a predictable result flowing from forming the non-woven gauze with an air-doffing apparatus card versus with the process using a lickerin roll set forth in Matsumura.

While Appellants are correct that Matsumura uses an adhesive binder (*i.e.*, a bonding agent) (App. Br. 10; FF 3), we do not find this persuasive of error. With respect to the claim language “a portion of the cellulose fibers penetrate into the gauze to achieve sufficient bonding without the use of a bonding agent”, we agree with the Examiner that this language permits the use of a mechanical bonding technique, which Appellants do not dispute. Rather, the Appellants contend that Ruffo does not teach or suggest that mechanical (*i.e.*, without the use of a bonding agent) and chemical (*i.e.*, a bonding agent) bonding techniques are “freely interchangeable” (App. Br. 10). We do not find this argument persuasive for the following reasons.

First, we interpret the claim language such that we determine that Ruffo is not necessary in the rejection of claim 16. It is axiomatic that claims are given their broadest reasonable interpretation in light of the specification as they would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). Claim 16 recites only that “...*a portion* of the cellulose fibers penetrate into the gauze to achieve a sufficient bonding with the textile fibres without any bonding agent” (emphasis provided). This language plainly does not set forth any minimum portion of cellulose fibers that must penetrate the gauze. The claim language only requires that *the portion* of cellulose fibers that penetrate into the gauze “achieve a sufficient bonding without any bonding agent”.

Appellants’ Specification states that the “...the present reinforced product is an integrated article not requiring any bonding agent (Spec 4:21-22).” However, to the extent one would read this as precluding the use of a bonding agent in the process, we cannot read limitations from the

specification into the claims. *See In re Zletz*, 893 F. 2d 319, 321-22 (Fed. Cir. 1989). The claim also uses open-ended language (*i.e.*, “A method... comprising :...” ) and does not require that no bonding agent is ever applied to the mat. The transitional term “comprising” is “inclusive or open-ended and does not exclude additional, unrecited elements or method steps.” *Georgia-Pacific Corp. v. United States Gypsum Co.*, 195 F.3d 1322, 1327 (Fed. Cir. 1999). Therefore, Appellants’ use of the term “comprising” permits the presence of additional steps, such as additional finishing steps as taught in Matsumura.

Matsumura teaches that some of the short cellulose fibers form interfiber bonds with the long textile fibers of the gauze layer, without using any bonding agent (FF 2).

Further, Matsumura states:

A part of the wood pulp fibers are pulled into the rayon fiber layer by the suction, resulting in a rayon and wood pulp *mixed layer between* the all-rayon and all-woodpulp layers. When the rayon layer is in the range of about 2 gm/M<sup>2</sup>, the surface layer is *actually* a mixture of both fiber types and corresponds in touch and feel to *homogenous* mix material...

(Matsumura, col. 2, ll. 56-63; emphasis provided).

Similarly, Appellants’ Specification states:

The nonwoven layer and cellulose fibre mat may be integrated to one another *to an extent in which a homogenous or essentially homogenous material is obtained*. The inventive absorbent material may also be a clearly defined multi-layer material *in which the boundary layers are integrated with one another*.

(Appellants’ Spec. 3:23-30; emphasis provided).

The above quoted passages support our determination that the interfiber bonding formed in Matsumura's process (namely, via the suction pulling the short fibers into the rayon layer, *i.e.*, the gauze layer) appears to be indistinguishable from that of Appellants' process, which also applies suction to integrate the layers (Spec. 6:15-17).

Thus, we determine that the teaching of Matsumura that *some* interfiber bonding occurs is sufficient to meet the claimed language "so that *a portion* of the cellulose fibers penetrate into the gauze to achieve a sufficient bonding with the textile fibers without any bonding agent" (emphasis provided).

However, even assuming that the claim requires that no bonding agent is ever applied to the absorbent material, we are still unpersuaded of any error. As discussed previously, the Examiner interpreted the claim language to permit the use of a mechanical bonding technique, which Appellants do not dispute. Matsumura teaches that the non-woven mat is "finished in the known manner", and that a "preferred form of such finishing stage" may apply adhesive (*see*, col. 9, ll. 54-65; FF 3). Therefore, Matsumura suggests the possibility of other known finishing techniques. Ruffo teaches that mechanical and chemical bonding techniques are known alternatives to the artisan for finishing non-woven webs (FF 6).

Thus, we fully agree with the Examiner that one of ordinary skill in the art would have used the familiar alternative mechanical treatment of Ruffo in place of the chemical (*i.e.*, adhesive) finishing process described in Matsumura with the results being predictable. *See KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. at 1739 ("The combination of familiar elements according to

known methods is likely to be obvious when it does no more than yield predictable results.”). (*See*, Ans. 5 and 9-11).

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. *See In re Young*, 927 F.2d at 591. All of the relevant teachings of the cited references must be considered in determining what they fairly teach to one having ordinary skill in the art. *See In re Mercier*, 515 F. 2d 1161, 1165 (CCPA 1975). Here, the combined teachings of Matsumura, Fehrer, and Ruffo exemplify that all the claimed steps are known in the art of producing non-woven articles. Thus, to modify Matsumura for the reasons as discussed above and those proposed by the Examiner would have been *prima facie* obvious (Ans. 3-5).

Therefore, we determine that performing the method steps set out in Appellants’ claim 16 would have been *prima facie* obvious to one of ordinary skill in the art for the foregoing reasons and those set out by the Examiner (Ans. 3-5).

#### *Product Claim 1*

We also fully agree with the Examiner’s findings of facts and conclusion of obviousness regarding claim 1 (Ans. 3-8). Claim 1 is a product-by-process claim, which Appellants do not dispute. It has been well established that, for a claim to a product, the patentability of the product defined by the claim, rather than the process for making it must be gauged in light of the prior art. *In re Wertheim*, 541 F.2d 257, 271, (CCPA 1976); *In re Brown*, 459 F.2d 531, 535 (CCPA 1972). Likewise it has long been held that “[i]f the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even

though the prior product was made by a different process.” *SmithKline Beecham Corp. v. Apotex Corp.*, 439 F.3d 1312, 1317 (Fed. Cir. 2006) (quoting *In re Thorpe*, 777 F.2d 695, [697] (Fed. Cir. 1985)).

The resultant end product of the applied references appears to meet all the structure set out in Appellants’ claim 1, as discussed throughout the analysis of method claim 16 above. Even assuming *arguendo* that Appellants are correct that the fibers of the non-woven gauze layer produced by an “air-doffing card apparatus” as claimed will be “aligned” rather than “random” as in the non-woven textile layer (*i.e.*, the gauze layer) of Matsumura (Reply Br. 4-5), we have determined above that the Examiner has made a *prima facie* case of obviousness based on modifying Matsumura to use the “air-doffing apparatus card” process of Fehrer to air lay the textile layer.

Keeping in mind that it is the claimed *product* that must be patentably distinguished from the prior art *product*, we determine, in light of the guidance offered by Fehrer on how to prepare an air laid non-woven textile web using an air-doffing card apparatus, that one of ordinary skill in the art would have used that familiar treatment to obtain an absorbent material with a gauze layer as claimed, with the results being predictable. *See KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. at 1739 (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”).

Thus, we do not see how Appellants’ product claim patentably defines over the prior art applied by the Examiner. In a case where patentability rests upon how the claimed product was made, the PTO has no reasonable ability to manufacture and determine whether there is, in fact, a patentable

difference between the prior art product and the claimed product. Under the circumstances, it is reasonable to shift the burden to Appellants to show that the claimed product is, in fact, patentably different from the prior art product. *In re Thorpe*, 777 F.2d at 697; *see also In re Best*, 562 F.2d 1252, 1255 (CCPA 1977).

Appellants have provided no such evidence here.

We have considered Appellants' other arguments in the Appeal Brief and Reply Brief, but do not find any of them persuasive.

Appellants have failed to successfully rebut the *prima facie* case of obviousness with argument or evidence of nonobviousness. We note that Appellants base no argument upon objective evidence of nonobviousness, such as unexpected results. Accordingly, we hereby sustain the rejections under 35 U.S.C. § 103 of claims 1-32 advanced by the Examiner on this appeal.

#### *Dependent Claims 33-36*

*Appellants do not separately argue the § 103 rejection of dependent claims 33-36 over Matsumura in view of Ruffo, Fehrer, and Rosseland. Rather, Appellants contend that the rejection is improper for the same reasons that the combination of Matsumura, Ruffo, and Fehrer was improper. However, we are unpersuaded by Appellants' arguments regarding that combination for the reasons above.*

*Accordingly, we sustain the Examiner's § 103 rejection of claims 33-36 based on the combined teachings of Matsumura, Ruffo, Fehrer, and Rosseland.*

DECISION

We sustain the Examiner's § 103 rejection of claim 1-32 based on the combined teachings of *Matsumura, Ruffo, and Fehrer*.

We sustain the Examiner's § 103 rejection of claims 33-36 based on the combined teachings of Matsumura, Ruffo, Fehrer, and Rosseland.

The Examiner's decision is AFFIRMED.

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

tc

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